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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,291	08/23/2006	Tomomasa Tatsumi	295220US0PCT	6804

22850 7590 10/30/2008

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EXAMINER	
CHAN, HENG M	

ART UNIT	PAPER NUMBER
4181	

NOTIFICATION DATE	DELIVERY MODE
10/30/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/590,291	TATSUMI ET AL.	
	Examiner	Art Unit	
	HENG M. CHAN	4181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/07/2007, 08/23/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Status of Application

Claims 1-10 are pending and examined on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4, and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 4, step 1) of each claim recites "adding alkali to make pH of the resultant mixed liquid 8 or more" and step 2) of each claim recites "adjusting pH of the resultant mixed liquid to fall within the range of from 6 to 12." This renders the claims indefinite because it is unclear whether the mixture pH should be 8 or more or range from 6 to 12.

In addition, claim 4 is drawn to a method for producing a catalyst by using a recovered molybdenum-containing liquid but is incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps may include but are not limited to drying, molding, crushing, and calcination.

Regarding claim 7, the temperatures of solution or slurry in the methods compared in the instant claim are not defined and so the instant claim fails to

particularly point out and distinctly define the metes and bounds of the claimed subject matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent no. 4,273,745 to Laferty et al.

Regarding claim 1, Laferty et al. discloses a method of recovering molybdenum from an ammonium molybdate solution comprising the steps of:

1. Providing an ammonium molybdate solution containing at least molybdenum, phosphorus, and alkali metals such as potassium (Table IV) that has a pH value between about 7 and about 10 (column 2, lines 64-65);
2. Adding at least one precipitant consisting of a water-soluble compound of at least one metal selected from the group consisting of aluminum, calcium, iron and magnesium to precipitate the phosphate anion (column 2, 18-26); and
3. Separating the phosphate precipitate from the ammonium molybdate solution (column 1, lines 59-60)

In step 1 above, the ammonium molybdate solution in Laferty et al.'s teaching contains at least molybdenum, phosphorus (A element in the instant claim), and

potassium (an X element). The ammonium molybdate solution has a pH between about 7 and about 10, which anticipates the claimed range of from 6 to 12. In step 2, to the ammonium molybdate solution, a magnesium-containing material is added to precipitate the phosphate ion just as claimed and aqueous ammonia is initially contained in the ammonium molybdate solution. The thus obtained phosphate precipitate is separated from the ammonium molybdate solution in step 3 and a solution containing at least molybdenum is obtained.

Regarding claim 2, Laferty et al. teaches that the ammonium molybdate solution obtained by method discussed regarding claim 1 is acidified to 3.0 to precipitate an ammonium polymolybdate (example 1).

Regarding claim 4, Laferty et al. anticipates all the steps in the claimed method as discussed regarding claims 1 and 2.

Regarding claim 5, "a raw material of molybdenum" defined by the applicant includes molybdenum recovered by a method other than the claimed or mentioned recovering methods in the instant application (page 13 of the specification). Laferty et al. teaches that the ammonium molybdate solution is derived from sequentially stripping a loaded ion exchange column or a char column from which loaded uranium values of an uranium ore are first stripped and then the loaded molybdenum values are recovered by stripping with an ammoniacal ammonium solution (column 2, lines 11-17). Laferty et al. uses this ammonium molybdate solution as a raw material of molybdenum together with the molybdenum-containing ammonium hydroxide solution from the stripping (column 2, lines 46-50).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 7, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laferty et al. in view of US Patent no. 6,777,369 to Kuroda et al.

Regarding claim 3, Laferty et al. does not teach that a molybdenum-containing material is a catalyst with a specified composition.

Kuroda et al. relates to a similar process for producing a molybdenum-containing precipitate by dispersing a spent catalyst in water, adding alkali metal compounds and/or ammonia solution to adjust the mixture to a pH of 8 or more, and forming a molybdenum precipitate by adding an acid to lower the pH (from column 2, line 38 to column 3, line 1). Kuroda et al. teaches the spent catalyst is obtained after a gas phase catalytic oxidation reaction of methacrolein to produce methacrylic acid (from column 1, line 67 to column 2, line 2) with the following formula (1) (see claim 5):

$$A_aMo_bV_cCu_dD_eX_fY_gZ_hO_i \quad (1)$$

(wherein Mo, V, Cu and O are molybdenum, vanadium, copper and oxygen, respectively; A is at least one element selected from the group consisting of phosphorus and arsenic; D is at least one element selected from the group consisting of antimony, bismuth, germanium, zirconium, tellurium, silver, selenium, silicon, tungsten and boron; X is at least one element selected from the group consisting of potassium, rubidium and cesium; Y is at least one element selected from the group consisting of iron, zinc, chromium, magnesium, tantalum, manganese, cobalt, barium, gallium, cerium and lanthanum; Z is sodium and/or thallium; a, b, c, d, e, f, g, h and i are each the atomic ratio of each element; when b is 12, a=0.5 to 3, c=0.01 to 3, d=0 to 2, e=0 to 3, f=0.01 to 3, g=0 to 3, h=0 to 3, and i is the atomic ratio of oxygen necessary for satisfying the valency of each component other than oxygen).

Definitions of elements in formula (1) are the same or similar to a significant extent for A, Mo, X, Y, and O in the instant claim. Elements V, Cu, and D in formula (1) are mostly included in Y in the instant claim and Z in X, respectively. The subscripts c, d, e, and g in formula (1) correspond to the subscript c in the instant claim, and f and h to d, respectively. The ranges for the corresponding subscripts are either exactly the same or overlapping.

It would have been obvious to one of ordinary skill in the art at time of invention to have used a molybdenum-containing spent catalyst with a specific composition taught by Kuroda et al. in the method of recovering molybdenum taught by Laferty et al., motivated by the fact that the ammonium molybdate solution used in Laferty et al.'s teaching is closely similar to the spent catalyst used in Kuroda et al.'s invention with regards to composition. The skilled artisan would have obtained predictable results from

a taught process by simple substitution of a known starting material (i.e. the ammonium molybdate solution) with a similar starting material (i.e. Kuroda et al.'s spent catalyst).

Regarding claim 7, "a raw material of molybdenum other than the recovered molybdenum-contain material" in the instant claim is interpreted the way as that in claim 5 of the instant application. Thus, the raw material of molybdenum considered regarding claim 7 is, for example, the ammonium molybdate solution in Laferty et al.'s disclosure. In example 1, Laferty et al. teaches treating an impure ammonium molybdate solution with the steps of removing a phosphorus precipitate, heating the phosphorus-free solution to 100° C, making a slurry by adding an acid to precipitate an ammonium polymolybdate, holding the slurry at 100° C, and then cooling it to room temperature.

Kuroda et al. teaches in example 1 that a solution obtained after treating the spent catalyst with an ammonia solution and hydrochloric acid was kept at 35 ° C.

Therefore, it would have been obvious to one of ordinary skill in the art at time of invention to have learned that the method for producing a catalyst using recovered molybdenum material requires the temperature of solution or slurry in the entire steps or a part of the steps in the production of catalyst is 0 to 40° C lower than that in the case where a raw material of molybdenum other than the recovered molybdenum-contain material is used, motivated by Kuroda et al.'s and Laferty et al.'s demonstrations in their examples.

Regarding claims 8 and 10, Laferty et al. teaches a specific example of a product from the disclosed method, a molybdenum trioxide, after calcining and after hot water leaching (Table V).

Laferty et al. does not specifically teach that the catalyst has a composition represented by a specified formula.

Kuroda et al. discloses that a molybdenum-containing catalyst obtained from treating a spent catalyst has a composition represented by formula (1), just as that presented above regarding claim 3 (see Kuroda et al. claim 10).

It would have been obvious to one of ordinary skill in the art at time of invention to have used the method taught by Laferty et al. to produce a catalyst with the same or similar composition as that disclosed by Kuroda et al., motivated by the fact that Laferty et al. requires but does not specifically disclose the detailed characteristics of the recovered molybdenum precipitate and Kuroda et al. discloses the formula of a molybdenum precipitate obtained by using a similar process.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laferty et al. and Kuroda et al. as applied above, further in view of US Patent no. 4,814,305 to Kamogawa et al.

Regarding claims 6 and 9, neither Laferty et al. nor Kuroda et al. specifically teach that 1 to 17 moles of ammonia per 12 atoms of molybdenum is included when the catalyst is produced.

Kamogawa et al. relates to a method of regenerating a phosphorus-, molybdenum- and alkali metal-containing catalyst which has been spent in the production of an unsaturated carboxylic acid by vapor-phase oxidation of an unsaturated aldehyde (column 1, lines 7-11). The deactivated catalyst contains

phosphorus, molybdenum, and alkali(s) such as potassium, rubidium and cesium, and may further contain one or more other elements like vanadium, silver, magnesium, zinc, selenium, tellurium, arsenic, copper, germanium, iron, nickel, silicon, tungsten, boron, bismuth, aluminum, tantalum, chromium, barium, antimony, tin and thallium (column 2, lines 23-37). The disclosed method comprises treating the catalyst with generally up to 100 moles of aqueous ammonia, preferably from 6 to 60 moles, per 12 gram atoms of molybdenum (column 2, lines 44-49).

It would have been obvious for one of ordinary skill in the art at time of invention to have used a narrower range of moles of ammonia per 12 atoms of molybdenum in the process of making a molybdenum product using the method taught by Laferty et al., motivated by Kamogawa et al.'s teaching that the function of the regenerated catalyst is inferior and this is caused conceivably by an undesirable complex compound formed when excessive ammonia is used (column 2, lines 50-54). The skilled artisan would have been motivated to optimize the prior art range in order to better control the amount of ammonia used during the production of the catalyst.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENG M. CHAN whose telephone number is (571)270-5859. The examiner can normally be reached on Monday to Friday, 8:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HMC

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4181